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Kevin P. Weldon
Kevin P. Weldon

Date: June 18, 2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)
ROBERT H. MONTGOMERY, JR.) Group Art Unit 3673
Serial No. 09/742,796) Examiner:
Filed: December 20, 2000) John J. Kreck
For: PROTECTIVE WEAR SLEEVE)
HAVING TAPERED LOCK AND)
RETAINER) June 18, 2003
)

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APPEAL BRIEF

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(1) Real Party in Interest

The rights to the above identified patent application have been assigned by the inventors to Kennametal Inc., having its principal place of business located at 1600 Technology Way, P.O. Box 231, Latrobe, PA 15650-0231.

(2) Related Appeals and Interferences

There are no related appeals or interferences to the application identified above.

(3) Status of Claims.

Claims 1-3, 5-11, 13 and 15-35 are pending in the application. Claims 29-35 have been withdrawn with traverse as being directed to a non-elected invention. Claims 1-3, 5-8, 10, 11, 13, 15, 16 and 18-28 are rejected.

Claims 9 and 17 are objected to as being dependent upon a rejected claim but would be considered allowable if amended to include all the limitations of the independent claim and any intervening claims.

(4) Status of Amendments

A Final Rejection was mailed November 21, 2002. In response to said Final Rejection, the applicant filed an amendment on April 21, 2003.

In an Advisory Action mailed April 30, 2003, the Examiner indicated that the April 21, 2003 amendment would be entered for purposes of Appeal. Accordingly, it is respectfully requested that the amendment filed April 21, 2003 be entered.

On May 19, 2003, applicant filed a letter requesting the Patent Office to clarify the record with regard to the status of claims 7, 9, 15 and 17. On May 21, 2003, the Examiner issued a corrected Final Rejection. No other amendments have been filed by applicant subsequent to the Final Rejection.

(5) Summary of Invention

The invention is an improved wear sleeve for a cutting bit assembly. The wear sleeve of the present invention is easily fixed within a bore of a bit holder. The wear sleeve of the present invention, in addition to being fixed easily into the bit holder bore in the field, successfully limits rotation within the bit holder, reducing undesirable wear caused by such rotation. The wear sleeve has an upper tapered section that cooperates with a tapered forward portion of the bit holder bore. In addition, the wear sleeve has a second rearward portion adapted to receive a split-retainer. The split retainer cooperates with a second cylindrical bore portion of the bit holder to assist in holding the wear sleeve in position.

(6) Issues

Whether claims 1, 8, 10, 11, 13, 16 and 18-21 are unpatentable under 35 USC 103(a) over Ritchey in view of LeBegue et al.

Whether claims 2, 3, 5 and 6 are unpatentable under 35 USC 103(a) as being unpatentable over Ritchey in view of LeBegue et al and Stewerf.

Whether claims 7, 15 and 22-28 are unpatentable under 35 USC 103(a) as being unpatentable over Ritchey in view of LeBegue et al and Bitelli.

(7) Grouping of Claims

Group I

Claims 1, 10, 11, 13 and 18-21 are grouped together so as to either stand or fall together in terms of unobvious over Ritchey in view of LeBegue under 35 USC 103.

Group II

Claims 8 and 16 are grouped together so as to either stand or fall together in terms of unobvious over Ritchey in view of LeBegue under 35 USC 103. Although claims 1, 10, 11, 13 and 18-21 are also rejected over Ritchey in view of LeBegue, claims 8 and 16 are believed to be separately patentable because the retainer in claims 8 and 16 is recited as including beveled ends that bias the retainer outward. Although each of the other limitations in claims 1, 10, 11, 13 and 18-21 are arguably disclosed in at least either Ritchey or LeBegue, the biasing beveled ends, it is believed by applicant, are not disclosed or even suggested in either Ritchey or LeBegue.

Group III

Claims 2, 3, 5 and 6 are grouped together so as to stand or fall together in terms of patentability over Ritchey in view of LeBegue et al and Stewerf under 35 USC 103(a). The application of an additional reference, the Stewerf patent, to meet the more specific limitations of the tapered portion having an angle between 5.5-7.0 degrees requires independent consideration with respect to its proper incorporation, under 35 USC 103, with the Ritchey and LeBegue patents. It is contested by applicant that Stewerf cannot be properly combined with Ritchey and LeBegue to establish a *prime facie* case of obviousness under 35 USC 103.

Group IV

Claims 7, 15 and 22-28 are grouped together so as to stand or fall together in terms of their patentability. Claims 7, 15 and 22-28 are rejected under 35 USC 103(a) as being over Ritchey in view of LeBegue and Bitelli. The application of an additional reference, the Stewerf patent, to meet the additional limitation of the rounded undercut requires independent consideration with respect to its proper incorporation, under 35 USC 103, with the Ritchey and LeBegue patents. It is contested by applicant that Bitelli cannot be properly combined with Ritchey and LeBegue to establish a *prime facie* case of obviousness under 35 USC 103.

(8) Argument

Group I

The applicant does not agree with the Examiner's position, and does not believe that all of the claimed limitations in either claims 1, 10, 11, 13 and

18-21 are unpatentable as being obvious in view of over Ritchey in view of LeBegue.

Claims 1, 10, 11, 13 and 18-21 recite that the wear sleeve has an external portion, including a rearward end portion, an annular groove portion and a forward tapered portion.

The Examiner admits that the claimed invention is distinguishable from Ritchey by its recitation of a forward tapered portion. The Examiner avers it would have been considered to have been obvious, in view of LeBegue, to modify Ritchey's forward external portion of the sleeve to be tapered. The Examiner draws attention to column 2, lines 36-48 in LeBegue, as providing motivation to design Ritchey's sleeve to be tapered in order to reduce stress on the base member. The examiner has not established a proper *prima facie* case of obviousness under 35 USC 103 since there would be no motivation to construct the sleeve in Ritchey to be tapered.

The Ritchey patent was designed to prevent rotation of the sleeve with respect to the bit holder during operation (column 2, line 21); this ability to prevent rotation is the primary thrust of Ritchey's disclosure. The sleeve in Ritchey is cylindrical and has an annular slot to hold a resilient clip 116 that functions to prevent the sleeve rotation. Several different embodiments of the clip 116 are illustrated in Ritchey that have varying geometries, all of which are adapted to increase friction and prevent rotation of the protective wear sleeve.

The applicant refers to LeBegue as teaching the incorporation of a complementary tapered sleeve and tapered bit holder portion. The Examiner identifies in LeBegue the language "in order to reduce stress on the base (holder)" as providing proper motivation to modify Ritchey to have a tapered portion. It is respectfully submitted that it is not required that the complimentary surfaces be "tapered" to "reduces stress" but that a

complimentary bearing surface having any shape would "reduce stresses" so long as the bearing surfaces are complimentary. In lines 36-39 of column 2, the first sentence states "It is also known to reduce the stresses exerted on the base member during the mining operation by forming complementary bearing surfaces between either the cutter bit or the bit holder and the base member." LeBegue does not describe that only tapered complementary bearing surfaces function to reduce stress, the Examiner appears to be making an assumption.

Additional support for applicant's position is also found in column 2, lines 11-22, where it is written that "If the seating of the bit older in the bore is improper or a slight misalignment exists between the complementary bearing surfaces of the bit holder and the base member, then the bit holder and the base member will [be] become worn under the **stresses** of the cutting operation." This explicitly describes that it is important that the surfaces be complementary to prevent wear caused by stresses. It is not detailed in the LeBegue description that the cooperating surfaces must be, or are even preferred, to have complementary **tapered** surfaces. Likewise in column 2, lines 53-57, LeBegue states "However, if complementary bearing surfaces are not fully engaged and are retained in a misaligned position, then the complementary bearing surfaces will wear relatively rapidly. As a result, the bit holder and the base member will require replacement." It appears evident that, according to LeBegue, the critical feature in reducing stress is that the bearing surfaces must be complementary.

The Ritchey patent discloses a wear sleeve having an external cylindrical surface 132 that is inserted within a complementary uniform bore formed in the support block 112. Complementary bearing surfaces already exist in Ritchey. It is submitted that the stresses in Ritchey are already limited by the cooperation of the complementary shapes of the external

surface of the cylindrical sleeve and smooth uniform bore of the cylindrical holder. The teachings of LeBegue are already adopted and met by Ritchey. Should any rotation occur between the protective wear sleeve and base in Ritchey, according to LeBegue's disclosure, these bearing surface would wear relatively slowly. There would have been no motivation for an artisan to modify the complementary cylindrical surfaces in Ritchey to specifically be complementary **tapered** surfaces. Such cylindrical complementary surfaces illustrated in Ritchey would work, according to LeBegue, equally as well as tapered surfaces to reduce stress. The applicant disagrees that there is motivation to combine, the Examiner's motivation to combine Ritchey with LeBegue, "in order to reduce stress on the base" is not supported by the disclosure in either reference.

The resilient clip in Ritchey is for the explicit purpose of preventing rotation of cylindrical sleeves within a block. LeBegue discloses employing tapered complementary surfaces between the sleeve and holder to prevent undesirable rotation, column 5, line 42, to column 6, line 28. The tapered portions lock together to "facilitate wedging engagement" that prevents rotation and undesirable wear caused by rotation of the sleeve. LeBegue discloses a solution, column 3, lines 17-24, see column 3, line 39- column 4, line 14, to the wear problem that occurs due to relative rotation between a bit holder and block base, see column 2, lines 17-22, lines 53-57, column 1, lines 55-61. The Applicant submits that an artisan would not be motivated to modify Ritchey to include a tapered portion on the sleeve because the Ritchey patent is already provided with a means to prevent such relative rotation, a resilient band. The specification in LeBegues discloses providing a new nonrotating bit holder design that reduces wear in prior art bit holder designs that were intentionally designed to rotate within base blocks. See column 1, line 57 - column 2, line 15. LeBegue solved the wear

problem caused by rotation in rotating bit holders by stopping rotation of the bit holder. LeBegue does not teach incorporating a tapered locking wedge to assist existing fixing means, as proposed by the Examiner in his *prime facie* rejection, in inhibiting rotation of a bit holder. An artisan would consider such additional fixing means redundant and unnecessary.

Further, Ritchey would also have to be modified to include with such tapered sections, according to LeBegue, apparatus that will "exert a downward axial force upon the shank portions so that the complementary bearings of the shank tapered body and the base member tapered bore are urged into wedging engagement.", see column 5, lines 55-60. In one embodiment the cutter member is pulled downward by a spring clip 62 and in another embodiment by a nut 78. It should first be noted that in Ritchey, any downward force applied by a spring clip or threaded nut, as discussed above, would result in the large forward portion 128 of the sleeve abutting against Ritchey's collar 126. Such abutting structure would preclude the tapered sections from "wedging" together in locked engagement. The teaching of LeBegue would not be functional and cannot be directly incorporated into Ritchey's cutter block assembly.

The applicant is claiming the combination of a wear sleeve having a tapered portion and annular collar for receiving a retainer, which is not taught by the prior art. The Examiner is using the present application as a guidelines for constructing the claimed invention. Using the patent application as a guideline constitutes impermissible hindsight in constructing the claimed invention.

The examiner has failed to demonstrate proper motivation to combine the Ritchey and LeBegue references under 35 USC 103 in order to establish a *prima facie* case of obviousness. Accordingly, it is submitted that claims 1, 10, 11, 13 and 18-21 be allowed.

Group II

The Examiner, in the Final Rejections, makes reference to beveled portions of the cylindrical split sleeve shown in Figures 6 and 10 of Ritchey et al as meeting the limitations set forth in claims 8 and 16. Claims 8 and 16 recite the cylindrical retainer having beveled end portions, "said beveled ends help bias said cylindrical split sleeve away f[r]om said wear sleeve." It is respectfully submitted that the chamfer 184 in Ritchey does not help bias the sleeve away from the shank. With respect to the Examiner's reference to Figure 10 in Ritchey, no structure falls within the scope of the phrase "beveled ends."

Group III

Claims 2, 3, 5 and 6 stand rejected under 35 USC 103 as being considered unpatentable over Ritchey, in view of LeBegue and Stewerf. Claims 2 recites that said forward tapered portion is tapered at an angle of between 5.5 - 7.0 degrees from a central axis.

The Examiner refers to the taper of the wear sleeve in Stewerf and the bore of the base member as rendering it obvious to modify Ritchey to have the tapered sections oriented at an angle of six (6) degrees. In column 6, line 47 - column 7, line 3 of Stewerf, Stewerf declares that the wear sleeve will not move axially or rotate within the base if the taper is within the range of 6 degrees to 12 degrees. As discussed above, Ritchey already provides means for inhibiting rotation of the wear sleeve. Hence in a similar manner, just as there is no motivation to combine LeBegue with Ritchey, the applicant submits that an artisan would likewise not be motivated to modify Ritchey, in view of Stewerf, to include a wedging tapered portion, having an angle between 5.5 - 7.0 degrees. The Ritchey patent is already provided with a means to prevent rotation of the

sleeve, a resilient band, hence a tapered locking arrangement would be redundant.

Group IV

Claims 7, 15 and 22-28 stand rejected under 35 USC 103 as being considered unpatentable over Ritchey, in view of LeBegue and Bitelli. Claim 7 recites that said wear sleeve external portion has a shoulder and a rounded undercut between said forward tapered portion and shoulder.

As best seen in Figures 5 and 6, the undercut portion 6 in Bitelli is positioned between the shoulder and conical head 8c. The wear sleeve has a tapered portion 5 that extends to a location adjacent to the shoulder 7. At the shoulder, a fillet 9a is formed at the connection between the shank 5 and shoulder 7. This fillet along its entire width has a greater cross-sectional diameter than the tapered portion. The Bitelli patent has an annular groove 6 formed in the tool holder body. The groove 6 is located outside the base block B (see abstract drawings, column 2 lines 8-10) when the protective wear sleeve is assembled within the block. The groove 6 is located outside the block so that the removable base is not broken inside the block, see column 2 lines 16-3 and column 3 lines 24-27. The shoulder 7 in Bitelli is for the purpose of protecting the truncated-cone shaped surface 5 and preventing debris from entering the bore in the block, see column 3 lines 46-50.

Ritchey has been modified, as proposed by the examiner, to have a rounded undercut portion formed between the shank (tapered as modified in view of LeBegue by the Examiner) and shoulder of Ritchey. The rounded undercut, is recited in applicant's claims as being "an external portion" of the sleeve. Therefore the rounded undercut, according to the Examiner's rejection, would necessarily have to be located adjacent the top surface 126 of Ritchey's block and the shoulder spaced somewhere

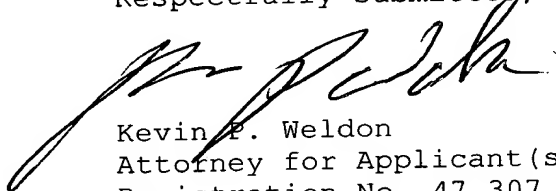
"external" (claim 7) to the top surface. As discussed above, the Bitelli reference teaches that its shoulder is intentionally designed to contact against the top face of the base block to prevent debris from entering therein and that the rounded undercut pre-set breaking point is positioned externally of the block. To modify Ritchey as proposed by the Examiner, to have a shoulder elevated above the top surface of the block, not contacting the top surface to inhibit debris, would be contrary to the explicit teaching of Bitelli. Bitelli teaches that such a rounded undercut, if incorporated with Ritchey, would be positioned above Ritchey's shoulder. The Examiner is using impermissible hindsight in constructing the claimed invention.

The Examiner has failed to demonstrate proper motivation to combine the Ritchey, LeBegue and Stewerf references under 35 USC 103 that would suffice to establish a *prima facie* case of obviousness. Accordingly, it is submitted that claims 7, 15 and 22-28 be allowed.

For each of the three (3) combinations of references applied under 35 USC 103, see Section No. 6 above, the Examiner, it is respectfully submitted, has failed to disclose proper motivation for combining the references. In view of applicant's rationale outlined above, it is respectfully submitted that claims 1-3, 5-7, 10, 11, 13, 15, 16 and 18-28 be allowed. Thus, applicant respectfully requests a Notice of Allowance indicating claims 1-3, 5-11, 13 and 15-28 as being allowable. If for any reason, the Examiner does not believe that the application is in condition for allowance, the Examiner is requested to telephone applicant with any comments or questions (724-539-3848) in order to expedite prosecution of the application.

The Commissioner is hereby authorized to charge any fees, including additional filing fees required under 37 CFR 1.16 and 1.17, in connection with this submission to Kennametal Inc. corporate Deposit Account 11-0508.

Respectfully submitted,



Kennametal Inc.
P.O. Box 231
Latrobe, PA 15650

Kevin P. Weldon
Attorney for Applicant(s)
Registration No. 47,307
Phone: 724-539-3848
Date: June 18, 2003

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Appendix

WHAT IS CLAIMED IS:

1. An apparatus for mounting a cutting tool used in mining, road working or earth moving comprising: a bit holder, a protective wear sleeve for reducing wear between the cutting tool and said bit holder, said protective wear sleeve having an external portion and a portion that is adapted to being received in said bit holder, said wear sleeve portion that is adapted to be received, including a rearward disc end portion, an annular groove portion and a forward tapered portion, and a retainer, wherein when said wear sleeve is hammered into position inside said bit holder, said retainer is biased outwards against said bit holder, whereby once said protective wear sleeve is set in said bit holder by axial blows with a hammer, said protective wear sleeve will remain in said bit holder without relative rotational or axial movement between said protective wear sleeve and said bit holder.

2. The apparatus according to claim 1 wherein said forward tapered portion is tapered at an angle of between 5.5-7.0 degrees from a central axis of the wear sleeve.

3. The apparatus according to claim 2 wherein said retainer is positioned around said annular groove of the wear sleeve.

4. The apparatus according to claim 1 further comprising: retainer for attachment to said wear sleeve around said annular groove.

5. The apparatus of claim 2 wherein said bit holder includes a cavity bore having a forward tapered portion and a rearward cylindrical portion for cooperatively receiving said wear sleeve.

6. The apparatus of claim 5 wherein said forward tapered portion of the bore is tapered at an

angle of between 5.5-7.0 degrees from a central axis of the cavity bore.

7. The apparatus according to claim 1 wherein the external portion is adjacent to the forward tapered portion, said wear sleeve external portion has a shoulder and a rounded undercut portion between said shoulder and said forward tapered portion of said wear sleeve, whereby when said wear sleeve is subjected to large loads and torques, the rounded undercut portion weakens and fails first.

8. The apparatus according to claim 1 wherein said retainer is generally a cylindrical split sleeve retainer having beveled portions at both ends of said cylindrical retainer, whereby said beveled end portions compress when inserted into said bit holder, said beveled ends help bias said cylindrical split sleeve outwardly away from said wear sleeve.

9. The apparatus according to claim 8 wherein said retainer beveled portions are initially angled at 25 degrees with respect to the central axis of said cylindrical retainer.

10. A joint coupling comprising:
a female member,
a male member,
said male member having an external portion and a portion that is adapted to being received in said female member, said male member portion that is adapted to be received including a rearward disc end portion, an annular groove portion, a forward tapered portion and a retainer,

wherein when said male member is hammered into position inside said female member, said retainer is biased outwards against said female member,

whereby once said male member is set in said female member, said male member will remain in said female member without relative rotational or axial movement between said male member and said female member.

11. The joint coupling according to claim 10 wherein said retainer is positioned around said annular groove of the male member.

12. The joint coupling according to claim 10 further comprising: retainer for attachment to said male member around said annular groove.

13. The joint coupling according to claim 10 wherein said female member includes a cavity bore having a forward tapered portion and a rearward cylindrical portion for cooperatively receiving said male member.

14. The joint coupling claim 12 wherein said forward tapered portion of the bore is tapered at an angle of between 8-11 degrees from a central axis of the cavity bore.

15. The joint coupling according to claim 10 wherein the external portion is adjacent to the forward tapered portion, said male member external portion has a shoulder and a rounded undercut portion between said shoulder and said forward tapered portion of said male member, whereby when said male member is subjected to large loads and torques the rounded undercut portion weakens and fails first.

16. The apparatus to claim 11 wherein said retainer is generally a cylindrical split sleeve retainer having beveled portions at both ends of said cylindrical retainer, whereby said beveled end portions compress when inserted into said female member, said beveled ends help bias said cylindrical split sleeve outwardly away from said male member.

17. The joint coupling according to claim 16 wherein said retainer beveled portions are initially angled at 25 degrees with respect to the central axis of said cylindrical retainer.

18. A cutting tool assembly comprising:
a bit holder,
a protective wear sleeve for reducing wear between the cutting tool and said bit holder,

said protective wear sleeve having an external portion and a portion that is adapted to being received in said bit holder, said wear sleeve portion that is adapted to be received including a rearward disc end portion, an annular groove portion, a forward tapered portion and a retainer, wherein when said wear sleeve is hammered into position inside said bit holder, said retainer is biased outwards against said bit holder, whereby once said protective wear sleeve is set in said bit holder by axial blows with a hammer, said protective wear sleeve will remain in said bit holder without relative rotational or axial movement between said protective wear sleeve and said bit holder.

19. An apparatus for mounting a cutting tool used in mining, road working or earth moving comprising:
a bit holder including a cavity bore having a rearward cylindrical portion,

a protective wear sleeve for reducing wear between the cutting tool and said bit holder, said protective wear sleeve having a portion that is adapted to being received in said bit holder, said wear sleeve portion that is adapted to be received including a rearward disc end portion, an annular groove portion, a forward tapered portion and a retainer,

wherein when said protective wear sleeve is hammered into position inside said bit holder, said retainer is biased outwards against said rearward cylindrical portion,

whereby once said protective wear sleeve is set in said bit holder by axial blows with a hammer, said protective wear sleeve will remain in said bit holder without relative rotational or axial movement between said protective wear sleeve and said bit holder.

20. The apparatus according to claim 19 wherein said wear sleeve further comprises an external portion having a shoulder.

21. An apparatus for mounting a cutting tool used in mining, road working or earth moving comprising:

a bit holder including a cavity bore having a forward tapered portion and a rearward cylindrical portion,

a protective wear sleeve for reducing wear between the cutting tool and said bit holder, said protective wear sleeve having a portion that is adapted to being received in said bit holder, said wear sleeve portion that is adapted to be received including a rearward disc end portion, an annular groove portion, a retainer and a forward tapered portion,

wherein when said protective wear sleeve is hammered into position inside said bit holder, said retainer is biased outwards against said rearward cylindrical portion,

whereby once said protective wear sleeve is set in said bit holder by axial blows with a hammer, said protective wear sleeve will remain in said bit holder without relative rotational or axial movement between said protective wear sleeve and said bit holder.

22. The apparatus according to claim 21 wherein the wear sleeve has an external portion adjacent to the forward tapered portion, said wear sleeve external portion has a shoulder and a rounded undercut portion between said shoulder and said forward tapered portion of said wear sleeve, whereby when said wear sleeve is subjected to large loads and torques, the rounded undercut portion weakens and fails first.

23. A wear sleeve for reducing wear between a cutting tool and a bit holder comprising:

an external portion and a portion that is adapted to being received in said bit holder, said wear sleeve portion that is adapted to being received including a rearward disc end portion, an annular groove portion and a forward tapered portion, said annular groove portion adapted to receive a generally cylindrical retainer,

wherein said wear sleeve has an external portion adjacent to the forward tapered portion, said

wear sleeve external portion has a shoulder and a rounded undercut portion for forming a preferential fail point between said shoulder and said forward tapered portion of said wear sleeve.

24. A cutter bit wear sleeve for reducing wear between a cutting tool and a bit holder, the wear sleeve having a central axis, said wear sleeve comprising:

an annular groove portion adapted to receive a generally cylindrical retainer;

a forward tapered portion; and

a shoulder;

wherein said forward tapered portion is between said annular groove and said shoulder, and said forward tapered portion is axially spaced from said shoulder.

25. The cutter bit wear sleeve according to claim 24 further comprising a rounded undercut portion, wherein said rounded undercut portion is between said shoulder and said forward tapered portion of said wear sleeve.

26. The cutter bit wear sleeve according to claim 24 further comprising a retainer.

27. The cutter bit wear sleeve according to claim 25 further comprising a retainer.

28. The cutter bit wear sleeve according to claim 27 wherein said retainer is positioned around said annular groove of the wear sleeve.

29. A cutter bit wear sleeve for reducing wear between a cutting tool and a bit holder comprising:

an annular groove portion; and

a retainer attached to said wear sleeve within said annular groove wherein said retainer has a central axis and beveled end portions angled toward said central axis.

30. The cutter bit wear sleeve according to claim 29 wherein said beveled ends are initially angled between 22 degrees - 28 degrees from the central axis.

31. The cutter bit wear sleeve according to claim 29 wherein said retainer said beveled ends are initially angled at about 25 degrees from the central axis.

32. The cutter bit wear sleeve according to claim 31 wherein said retainer is made from spring steel.

33. The cutter bit wear sleeve according to claim 29 further comprising:

a shoulder; and

a forward tapered portion;

wherein said forward tapered portion is between

34. The cutter bit wear sleeve according to claim 33 further comprising:

a rearward disc end portion adjacent said annular groove.

35. The cutter bit wear sleeve according to claim 29 further comprising:

an external portion, wherein a forwardmost end of said external portion includes a plurality of notches.